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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,964	08/29/2000	Andrew Bishop	Q00-1041-US1	8999

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EXAMINER	
AHN, SAM K	

ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/650,964	BISHOP ET AL.	
	Examiner	Art Unit	
	Sam K. Ahn	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *amendment, 02/02/05*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6* is/are allowed.

6)☒ Claim(s) *1-5 and 7-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 May 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see p.1, filed 02/02/05, with respect to the rejection(s)of claim(s) 8 and 12 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ray in view of Pessoa USP 6,535,552 B1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1,3,7,8-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ray, USP 5,257,286 (cited previously) in view of Pessoa USP 6,535,552 B1.

Regarding claims 1 and 7, Ray discloses a method and an apparatus of a circuit for adaptively amplifying an input signal, the circuit (see Fig.1) comprising an adaptive filter (10) connected to receive the input signal (input to 10) and to amplify a predetermined frequency range (for use in a high frequency range, note col.2, line 65 – col.3, line 1) of the input signal by an amount based on an amplification control signal (output of 14) input to the adaptive filter (10) to generate an amplified input signal (output of 10). Ray further teaches a comparator (12) connected to receive the amplified input signal from the adaptive

filter and a predetermined threshold signal (23), the comparator outputting a comparison signal that compares the amplified input signal to the predetermined threshold signal (note col.3, lines 47-60). And Ray teaches a filter adaptation circuit (14) connected to receive the comparison signal (output of 12) and to modify the amplification control signal based on the comparison signal during a normal mode of operation.

However, Ray does not teach a training mode of operation to calibrate the generation of the amplification control signal based on the comparison signal and a known training pattern.

Pessoa teaches calibrating the generation of the amplification control signal (output of 34) based on the comparison signal (e) and a known training pattern (z) (note col.7, lines 6-29). Therefore, it would have been obvious to one skilled in the art at the time of the invention to implement a training mode prior to the normal in Ray's system, thus calibrating generation of the amplification control signal based on the comparison signal and a known training pattern for the purpose of quickly setting the system to optimal or near-optimal performance, as taught by Pessoa (note col.5, line 67 – col.6, line 3).

Regarding claim 3, Ray teaches all subject matter as applied to claim 1. Ray further teaches wherein the predetermined frequency range amplified by the adaptive filter consists of high frequency components of the input signal (note col.1, lines 12-28 and col.3, line 1).

Regarding claim 8 and 12, Ray discloses a method and an apparatus of a circuit for adaptively amplifying an input signal, the circuit (see Fig.1) comprising an adaptive filter (10) connected to receive the input signal (input to 10) and to amplify a predetermined frequency range (for use in a high frequency range, note col.2, line 65 – col.3, line 1) of the input signal by an amount based on an amplification control signal (output of 14) input to the adaptive filter (10) to generate an amplified input signal (output of 10). Ray further teaches a comparator (12) connected to receive the amplified input signal from the adaptive filter and a predetermined threshold signal (23), the comparator outputting a comparison signal that compares the amplified input signal to the predetermined threshold signal (note col.3, lines 47-60). And Ray teaches a filter adaptation circuit (14) connected to receive the comparison signal (output of 12) and to modify the amplification control signal based on the comparison signal during a normal mode of operation. Ray further teaches a predetermined threshold level (23) to adjust the amplification control signal (note col.3, lines 47-50) However, Ray does not teach a training mode of operation to calibrate the generation of the amplification control signal based on the comparison signal and a known training pattern, and does not explicitly teach increasing or decreasing the amplification control signal based on the known training pattern based on when the comparison signal indicates that the input signal is below the predetermined threshold level.

Pessoa teaches calibrating the generation of the amplification control signal (output of 34) based on the comparison signal (e) and a known training pattern (z) (note col.7, lines 6-29). Therefore, it would have been obvious to one skilled in the art at the time of the invention to implement a training mode prior to the normal in Ray's system, thus calibrating generation of the amplification control signal based on the comparison signal and a known training pattern for the purpose of quickly setting the system to optimal or near-optimal performance, as taught by Pessoa (note col.5, line 67 – col.6, line 3).

Furthermore, it would have been obvious to one skilled in the art at the time of the invention to increase and decrease the amplification control signal depending on the comparison signal (as previously explained that the amplification control signal is based on comparison signal and the known training pattern) to respond to the comparison signal of Ray (output of 12) for the purpose of properly adjust the gain level, as taught by Ray (note col.3, lines 47-60).

Regarding claims 9 and 10, Ray in view of Pessoa teach all subject matter as applied to claim 7. Ray further teaches wherein a voltage level of the predetermined threshold level (23) is (below or above, note col.4, lines 9-41) a voltage offset from a voltage level used to convert the input signal to a digital value (output of 12).

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ray, USP 5,257,286 (cited previously) in view of Pessoa USP 6,535,552 B1 and Gasparik USP 6,643,324 B1(cited previously).

Regarding claim 2, Ray in view of Pessoa teach all subject matter as applied to claim 1. It is well-known to one skilled in the art that an equalizer performs well in reducing inter-symbol interference in the signal received, as Pessoa also teaches the adaptive filter reducing intersymbol interference (ISI) based on the known training pattern, as previously explained (z, note col.6, lines 45-60 and col.7, lines 16-29). And Ray further teaches an equalizer for recovering data from a received signal having a high frequency (abstract), also as explained previously teaches the adaptive filter, and further suggests wherein the teaching may be adapted for use in other high frequency application (note col.3, line 1). However, Ray in view of Pessoa do not explicitly teach wherein the received signal is a SCSI signal.

Gasparik also teaches an equalization receiver equalizing a received SCSI signal (note col.5, line 65 – col.6, line 2) and removing ISI (note col.1, lines 7-19) from the received SCSI signal having a high frequency. Therefore, it would have been obvious to one skilled in the art at the time of the invention to implement Ray's teaching of the equalizer in Gasparik's equalizer for the purpose of implementing the equalization in other environments, thus having a robust control over the equalizer gain and frequency response, as taught by Ray (note col.1, line 41-col.2, line 23)

4. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over in Ray, USP 5,257,286 (cited previously) in view of Pessoa USP 6,535,552 B1 and Stroet et al. (cited previously).

Regarding claims 4 and 11, Ray in view of Pessoa teach all subject matter claimed, as applied to claim 1 or 7. Although Ray discloses a third order elliptic filter (note col.3, line 37-39), Ray does not explicitly teach wherein the adaptive filter is a third order Bessel filter. Stroet teaches implementation of the third order Bessel filter where the linearity requirement is needed, and wherein Stroet also teaches the filter adaptively adjusting input signal. (note col.9, line 46 – col.10, line 8) Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Ray's teaching of the filter having the third order elliptic filter with a third order Bessel filter for the purpose of effectively meeting a linearity requirement when necessary during filtering stage, as taught by Stroet. (note col.9, line 46 – col.10, line 8)

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ray, USP 5,257,286 (cited previously) in view of Pessoa USP 6,535,552 B1 and Gaudet (cited previously).

Regarding claim 5, Ray in view of Pessoa teach all subject matter claimed, as applied to claim 1. Ray teaches wherein the adaptive filter receives an analog signal from the digital signal (output of the comparator sent to the filter

adaptation) which is decoded and is sequentially switched out to the respective filters. However, Ray does not teach a DAC converting the feedback signal from the filter adaptation to feed the signal to the adaptive filter. Gaudet teaches (see Fig.4) an analog adaptive filter (67), further including DAC (81, digital to analog converter) converting the output signal from the filter adaptation (19) to feed the adaptive filter. (note col.12, line 43 – col.13, line 4) Therefore, it would have been obvious to one skilled in the art at the time of the invention to replace Ray's decoder logic (90 and 92) with Gaudet's DAC for feeding the signal to the filter in an analog format. It would have been a matter of design choice to either provide a decoder logic or a DAC as the outputs are almost identical, and one may be opted to design using a component which are readily available in the market.

Allowable Subject Matter

6. Claim 6 is allowed.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Doron, USP 6,778,599 B1 teaches training of the adaptive filter in a digital transceiver.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax

phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn
6/14/06

TEMESGHEN GHEBRETINSAE
PRIMARY EXAMINER